TASC Presentation for the Midnite Mine Community Workshop

October 29, 2014

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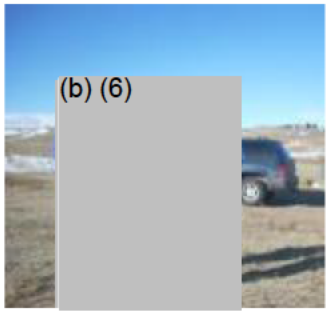
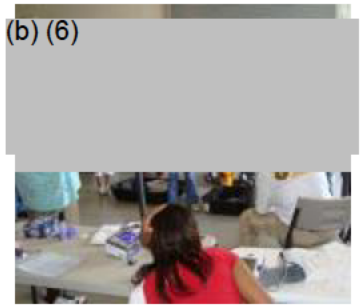
of Skeo Solutions

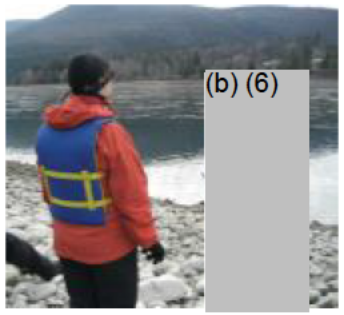
Presentation Outline

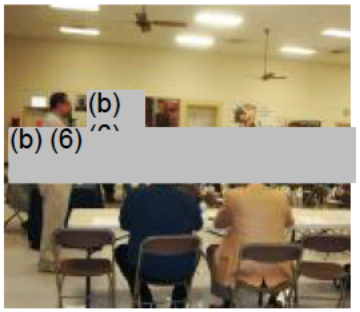




- TASC
- Your Comments
- Superfund Process and What Happens Next
- Technical Presentation
- Contact Information

What is the Relationship Between TASC and EPA?





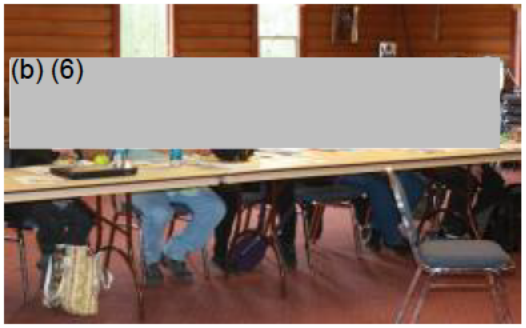
Technical **A**ssistance **S**ervices for **C**ommunities

- One of several EPA-sponsored technical assistance programs
- Independent services provided under contract with skeo SOLUTIONS

Things TASC Can Do

- Technical advisor services
  - Explain technical information
  - Help communities formulate questions and comments on agency documents
- Meeting facilitation
- Fact sheets & brochures
- Job training
- Maps, diagrams, visual aids
- Translations
- Workshops
- Education

Technical Assistance for the Midnite Mine Community



- Assistance began in 2012
- Technical advisors have:
  - performed a needs assessment and documented community concerns
  - reviewed technical documents related to the cleanup
  - provided plain language summaries of technical meetings
  - traveled to Wellpinit to meet with community members

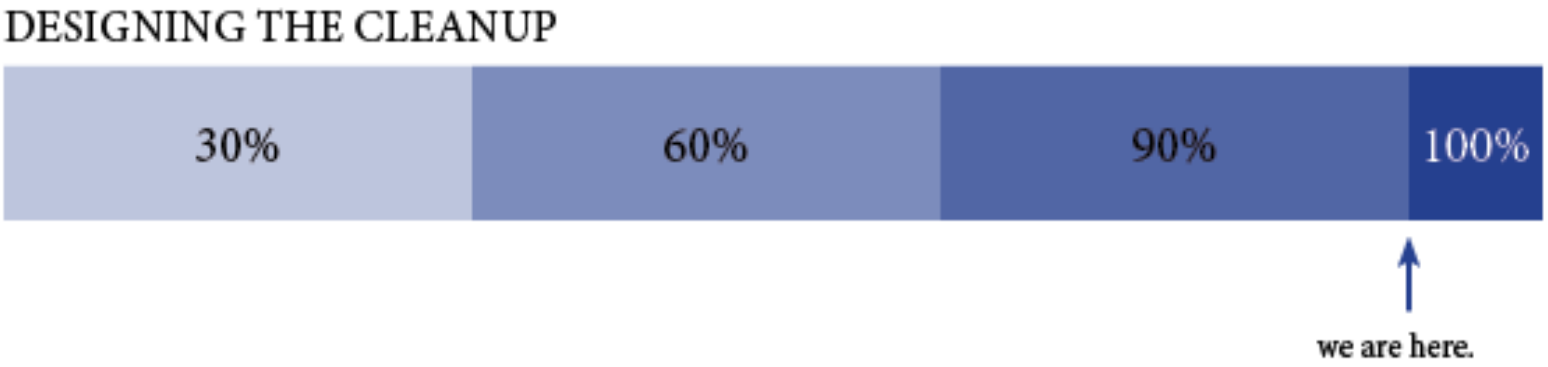
Submitting Comments to EPA on the 90 Percent Design

- Comments due **November 10, 2014.**
- Comments must be **technically supported** to be considered.
- TASC Advisor is available to help:
  Terrie Boguski (tboguski@skeo.com)
  (913) 780-3328
- Submit comments to:
  EPA Project Manager,
  Elly Hale (hale.elly@epa.gov)

What will EPA do with our comments?

1. Collect all comments
2. Read and follow up
3. Create comments in response to the 90 Percent Design

Because this is not a formal comment period, EPA may or may not choose to include all of the community comments in the response.



What happens after the design is complete?

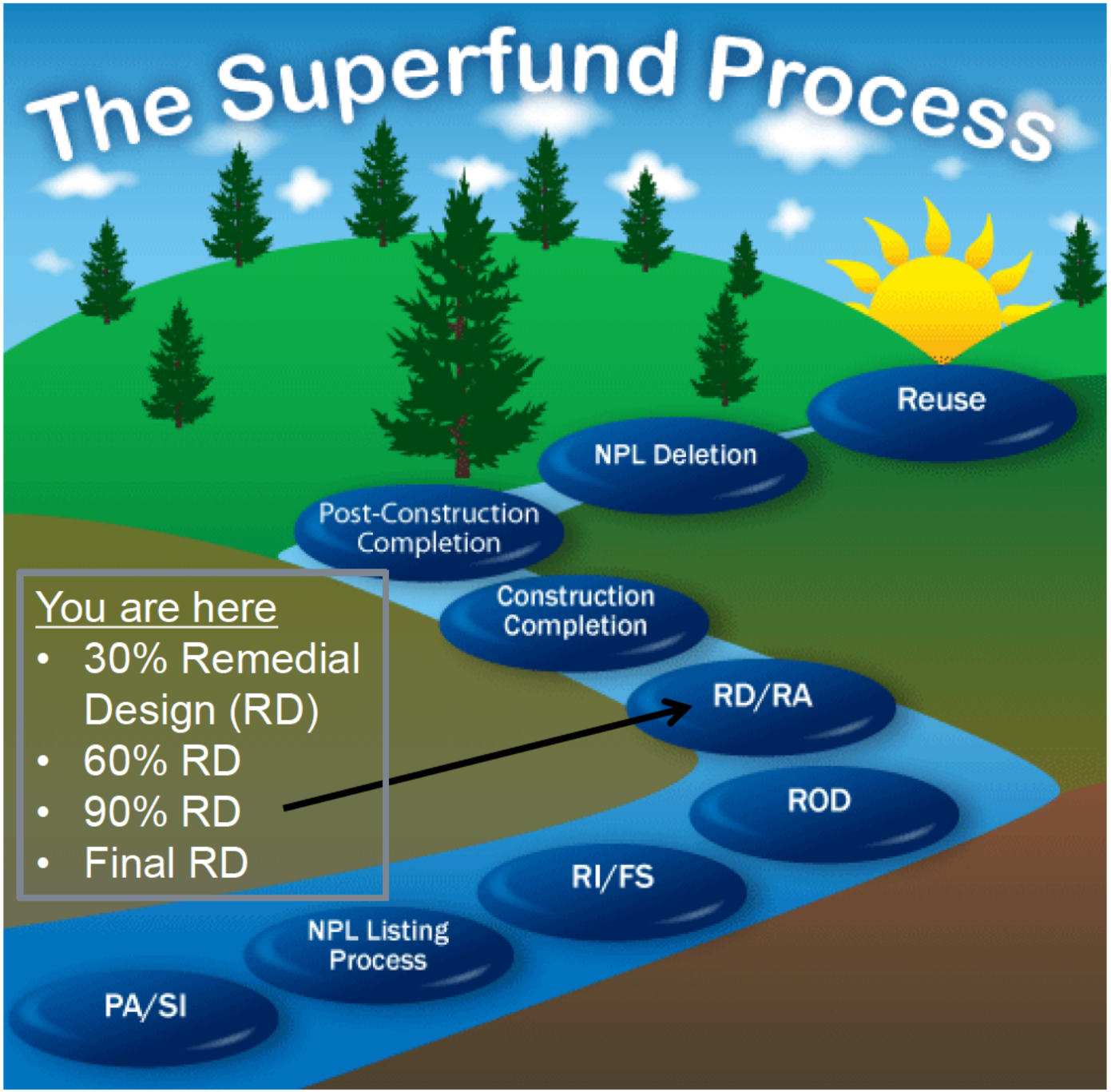
1. 100 percent FINAL design expected in January
2. EPA will create a fact sheet
3. EPA may hold a public meeting
4. EPA will want to hear from community members about ways to further enhance the cleanup including:
    - Construction impacts
    - Road safety issues
    - Job opportunities
    - Community engagement
    - Adequate signage and remedy protection
5. Bidding will begin early in the year. Cleanup construction may start as soon as June 2015 and will likely last about 10 years or more.

Going forward, what are important opportunities for community involvement?

1. Regular technical meetings
2. EPA public meeting on the Final Design (not confirmed, but can be requested)
3. Official public comment period during NPDES water permitting process for treated water
4. Potential job opportunities
5. Continual feedback throughout the 10+ year cleanup process

Possible Jobs During Cleanup

- Engineer(s)
- Scheduler(s)
- QA/QC Personnel
- Surveyor(s)
- Industrial and Radiation Safety Personnel
- Supervisor(s)
- Administrative Personnel
- Environmental Technician(s)
- Water Treatment Plant Operators
- Security personnel
- Revegetation personnel such as:
- Hydroseeders
- Planters
- General Laborers
- Heavy Equipment Operators including:
  - Dozer Operator(s)
  - Front-end Loader Operator(s)
  - Haul Truck Operator(s)
  - Water Truck Operator(s)
  - Excavator/Back-hoe Operator(s)
  - Scrapper Operator(s)
- Crusher/Screening Plant Operator(s)
- Electrician(s)
- Mechanic(s)
- Welder(s)
- Pipefitter(s)
- Tractor Operator(s)


The Superfund Process
Reuse
NPL Deletion
Post-Construction Completion
Construction Completion
RD/RA
ROD
RI/FS
NPL Listing Process
PA/SI
You are here
• 30% Remedial Design (RD)
• 60% RD
• 90% RD
• Final RD

Midnite Mine Design and Construction Phasing

Remedial Design – 2012-2015

Early Works and Phase 1– 2015 – 2018

- Access Road
- Mobilization
- Construction Support Zone Site Preparation
- Alluvial Groundwater Collection System
- West Access Road cleanup
- Pit 4 Dewatering and Pit Preparation
- Pit 4 Backfilling
- Water Treatment Plant (WTP) Construction
- South Pond Construction
- Cover Borrow Area Preparation
- Pit 4 Cover System and Revegetation

Phase 2 - 2018 - 2021

- Pit 3 Dewatering and Preparation
- Pit 3 and BPA Phase II Backfill
- Eastern Drainage, Western Drainage Sediment Removal
- East Access Road cleanup
- Old WTP Demolition
- West Pond Construction
- Area 5 Grading and Capping

Phase 3 – 2022 - 2024

- South Dump Pond Removal
- Central Drainage Mine Waste Rock and PCP Removal
- Central Drainage Sediment Removal
- Area 5 Grading
- Site/Decontamination Area Cleanup
- Pit 3 and BPA Cover System System

Post Remediation – 2025 onward

- Ongoing Water Treatment
- Site Monitoring and Maintenance
- West Pond Decommissioning

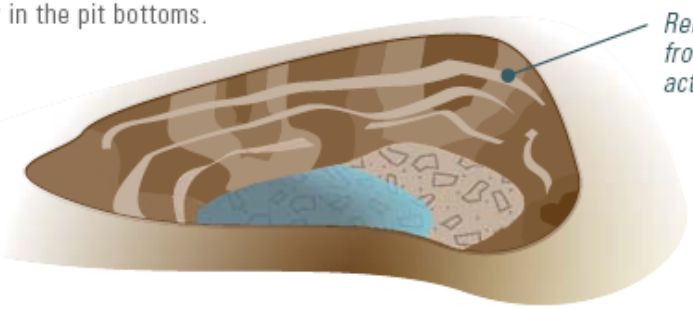
MAIN ELEMENTS OF THE
MIDNITE MINE CLEANUP PROJECT

REMEDIAL DESIGN:

Prepare engineering plans and technical specifications for the Remedial Action

EARTHWORK:

Prepare the two open pits for consolidation of mine waste rock by removing contaminated water and sediments and placing a layer of drain rock and liner in the pit bottoms.



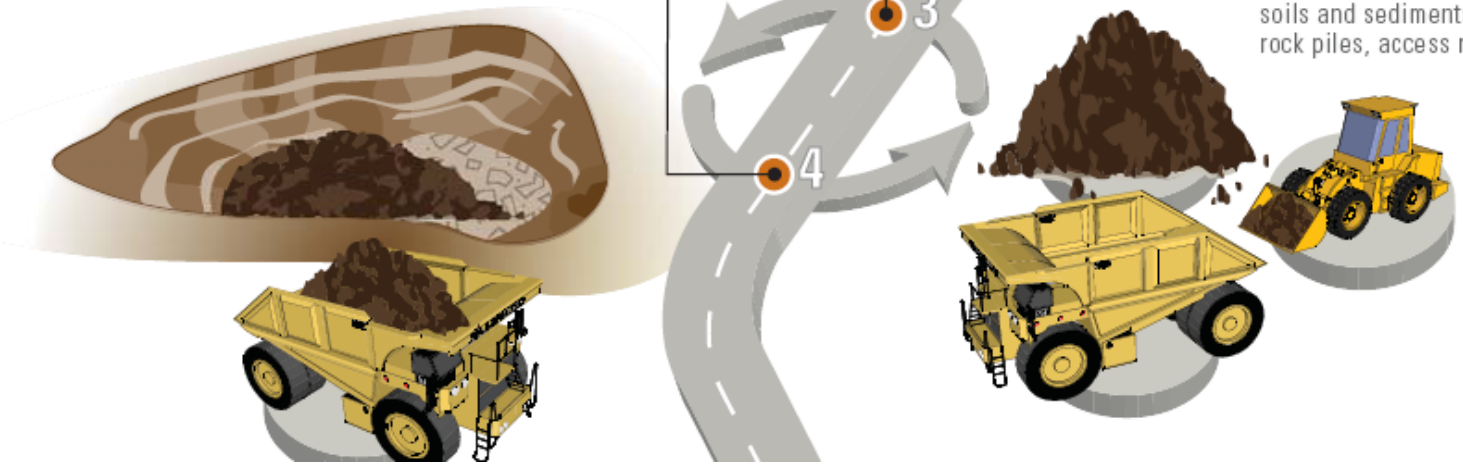
Remnant open pit from former mining activities

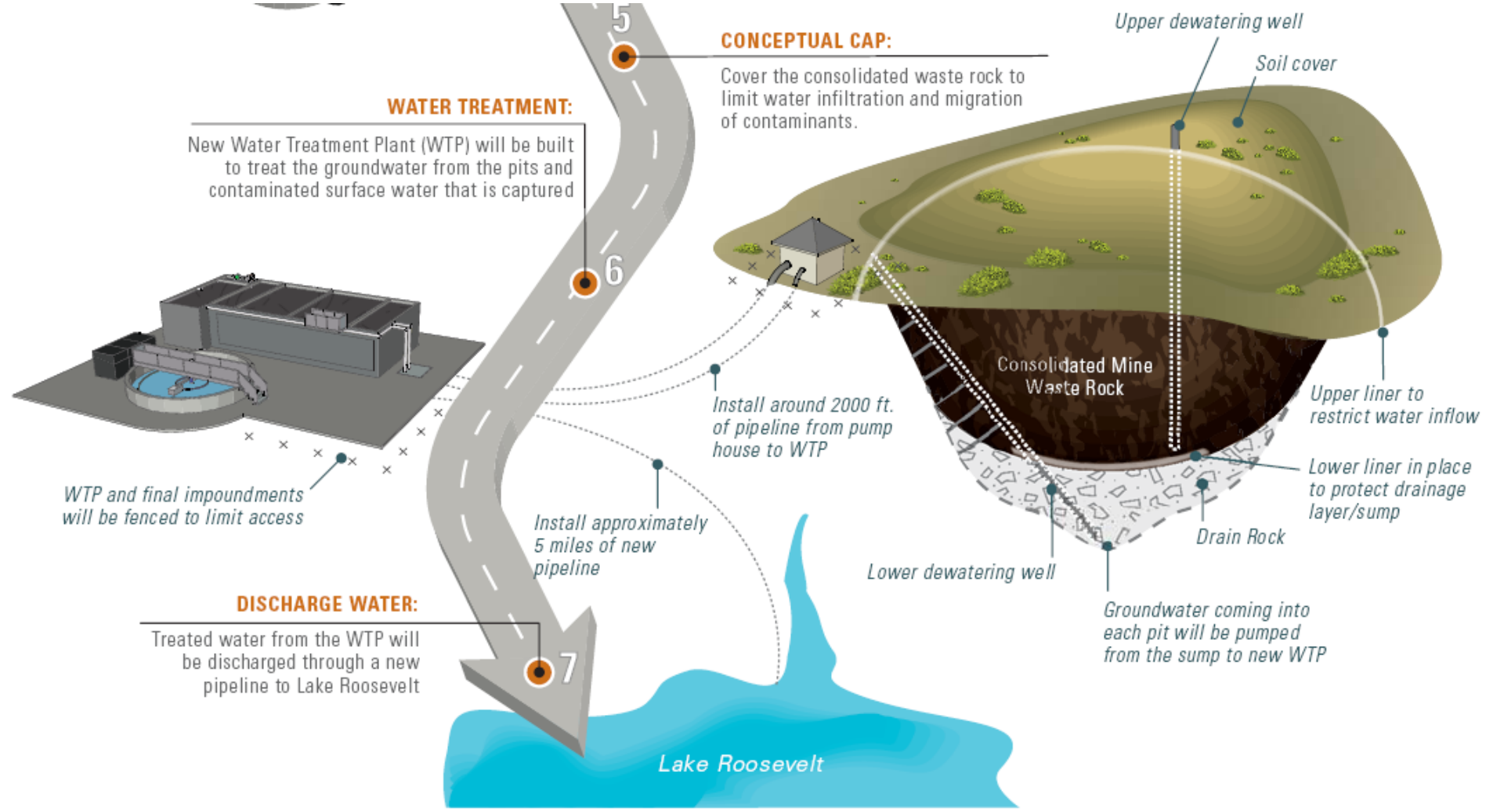
BACKFILL:

Consolidate the mine waste rock in the lined pits.

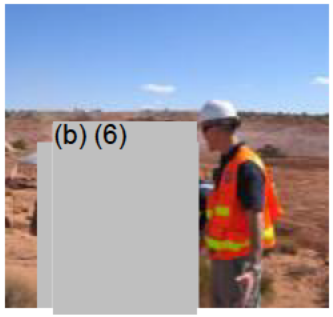
EXCAVATION:

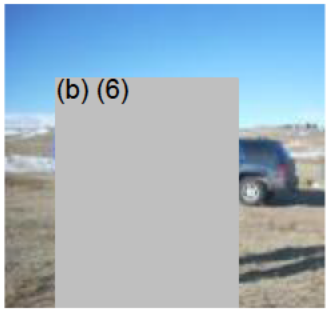
Excavate approximately 18 million cubic yards of mine waste rock, protore, and contaminated soils and sediments from the remnant waste rock piles, access roads, and drainages.

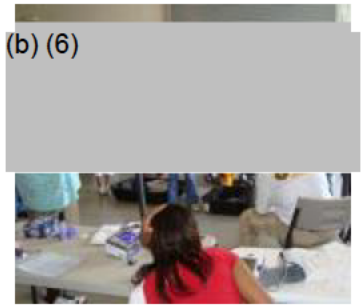



5
CONCEPTUAL CAP:
Cover the consolidated waste rock to limit water infiltration and migration of contaminants.
Upper dewatering well
Soil cover
WATER TREATMENT:
New Water Treatment Plant (WTP) will be built to treat the groundwater from the pits and contaminated surface water that is captured
6
Consolidated Mine Waste Rock
Upper liner to restrict water inflow
Install around 2000 ft. of pipeline from pump house to WTP
Lower liner in place to protect drainage layer/sump
WTP and final impoundments will be fenced to limit access
Drain Rock
Install approximately 5 miles of new pipeline
Lower dewatering well
Groundwater coming into each pit will be pumped from the sump to new WTP
DISCHARGE WATER:
Treated water from the WTP will be discharged through a new pipeline to Lake Roosevelt
7
Lake Roosevelt

Technical Presentation

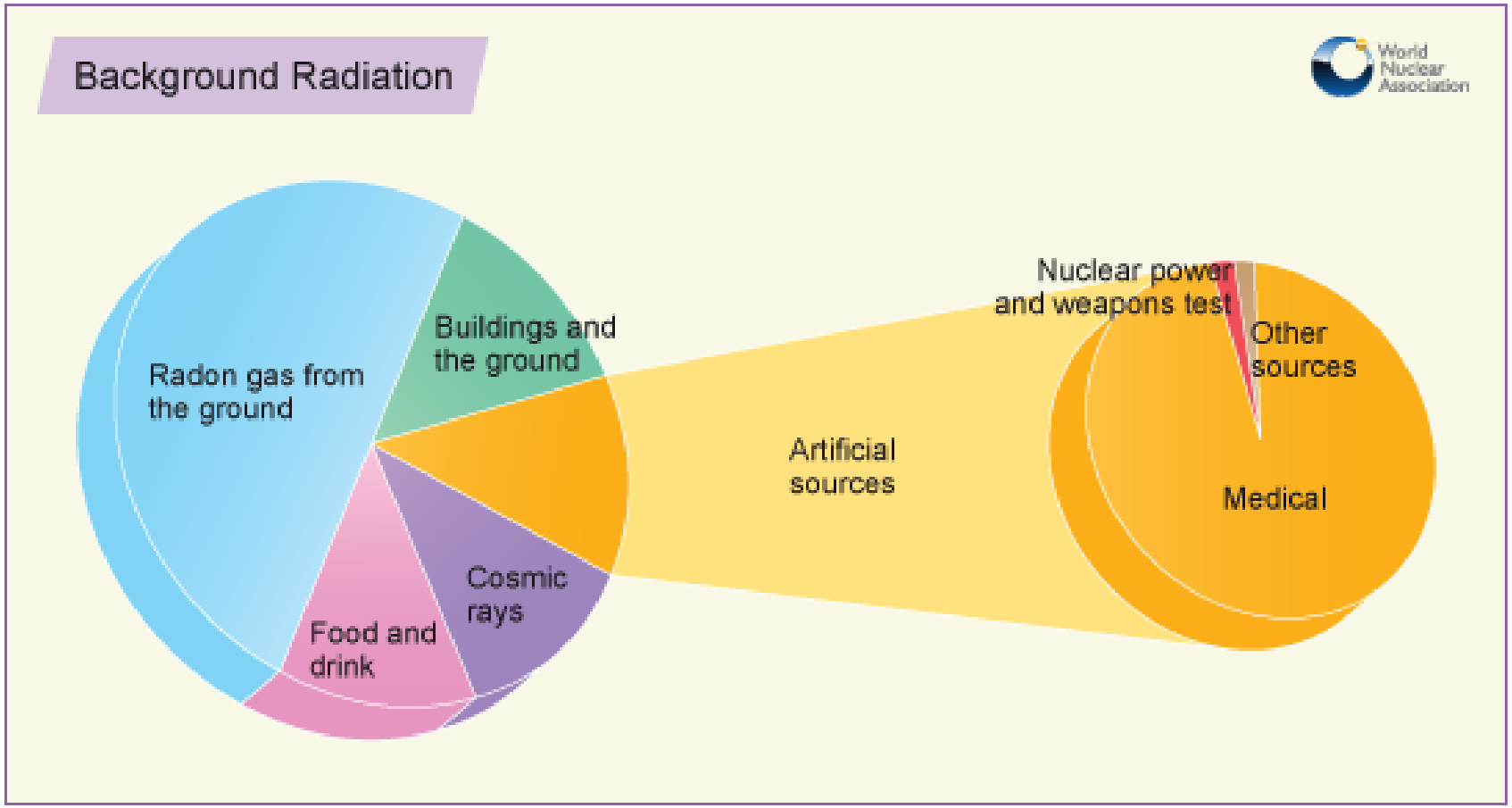






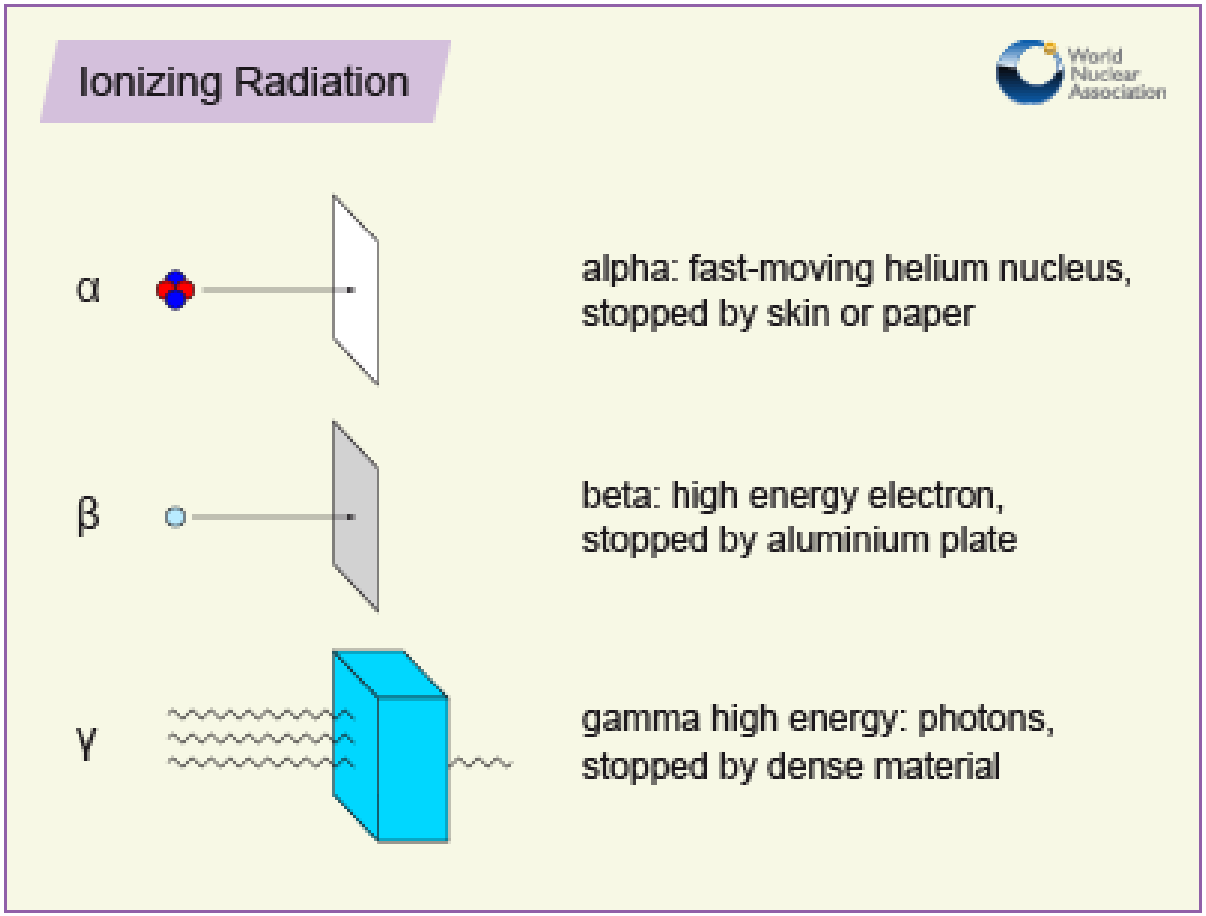
1. General information about ionizing radiation, uranium and acid rock drainage
2. Midnite Mine – existing conditions and future plans
3. TASC summary of 90 Percent Design
4. Discussion

Ionizing Radiation



Source: http://www.world-nuclear.org/Nuclear-Basics/What-is-radiation-/

Ionizing Radiation



Source: http://www.world-nuclear.org/Nuclear-Basics/What-is-radiation-/

Uranium

- Uranium is present in nearly all soil, rock and water in very small amounts
- All forms of uranium are radioactive
- People are exposed by inhaling dust in air, or eating food and drinking water
- About 99 percent of the uranium ingested in food or water will leave a person's body
  - The remainder will enter the blood
  - Most absorbed uranium will be removed by the kidneys within a few days
  - A small portion will remain in a person's bones for years.

Uranium and Health Risk

- Intakes of uranium exceeding EPA standards can lead to:
  - Increased cancer risk
  - Liver damage
- Long-term chronic intakes can make a person sick from the toxicity of the metal

http://www.epa.gov/radiation/radionuclides/uranium.html#affecthealth

Uranium Hard Rock Mining

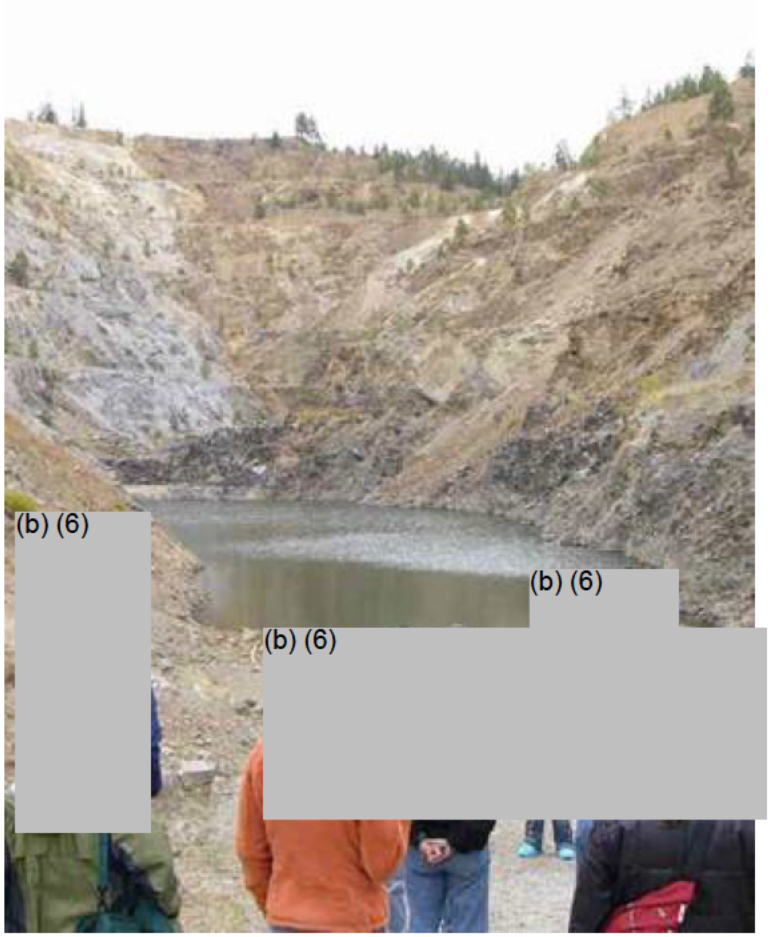
- The Midnite Mine is an open-pit mine
  - Over 33 million tons of rock were blasted to access uranium ore
  - Site contaminants include:
    - radium-226, lead-210, uranium-234 and uranium-238
  - High sulfate levels indicate that acid rock drainage is being formed


Pit 3

Source: Kansas State University website

Open Pit Mining

- Open-pit mines are typically dug on benches (narrow strips of land cut into the side of an open pit mine)
- Most walls are dug on an angle to protect from rock falls
- A haul road is usually situated at the side of the pit, forming a ramp up which trucks can carry ore and waste rock



Pit 4

Source: Kansas State University website

Acid Rock Drainage (ARD)

- Also called acid mine drainage
- Acidic water is created when sulfide minerals are exposed to air and water and produce sulfuric acid
  - A natural reaction when oxygen is present
- ARD often contains high concentrations of dissolved metals
  - Toxic to aquatic animals, insects and plants

$$2FeS_2(s) + 2H_2O + 7O_2 \rightarrow 4H^+ + 4SO_4^{2-} + 2Fe^{2+}$$

$$4Fe^{2+} + O_2 + 4H^+ \rightarrow 4Fe^{3+} + 2H_2O$$

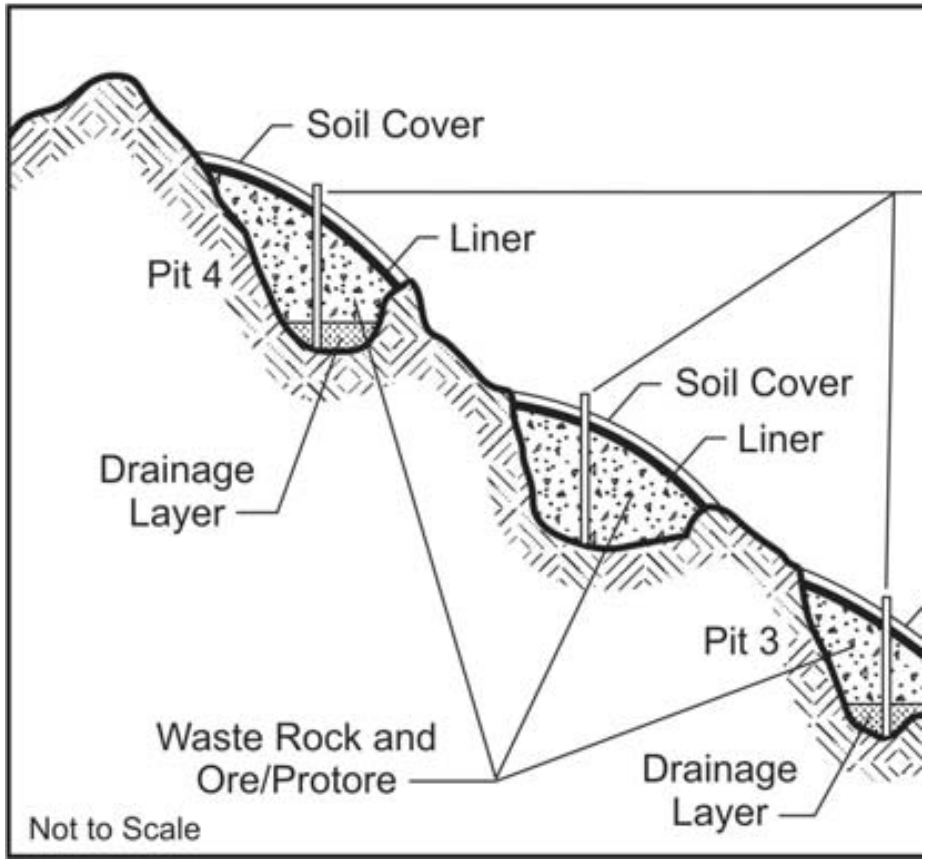
$$2FeS_2(s) + 14Fe^{3+} + 8H_2O \rightarrow 15Fe^{2+} + 2SO_4^{2-} + 16H^+$$

Source: http://www.iowadnr.gov/Environment/WaterQuality/WaterMonitoring/FishKills.aspx

Prevention of ARD

Cover Waste Rock

- Installing a cover of clay, plastic or soil over piles of waste rock:
  - prevents rain and other precipitation from contributing to ARD formation and transport
  - reduces the amount of oxygen available to react with the sulfide minerals

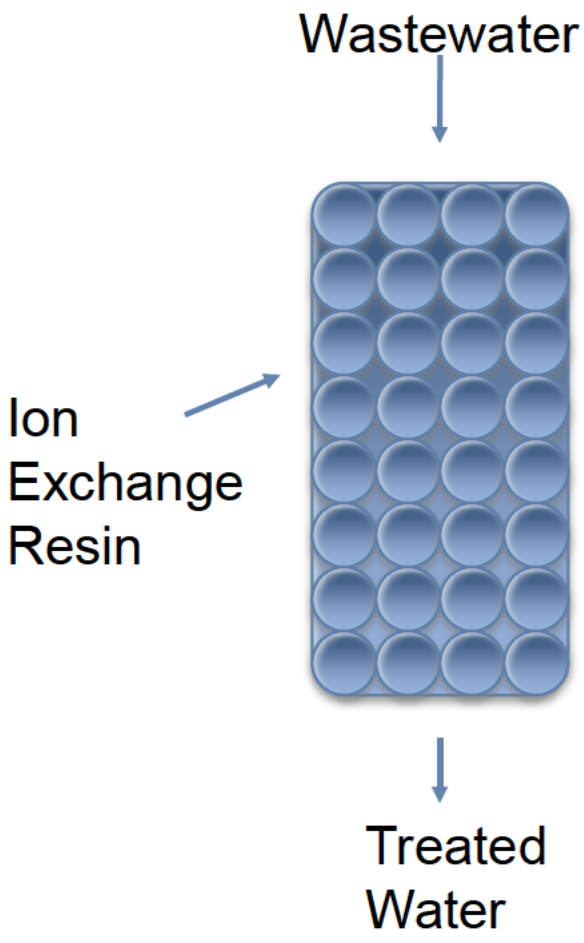


Water Treatment

Goal: Remove radium, uranium and heavy metals

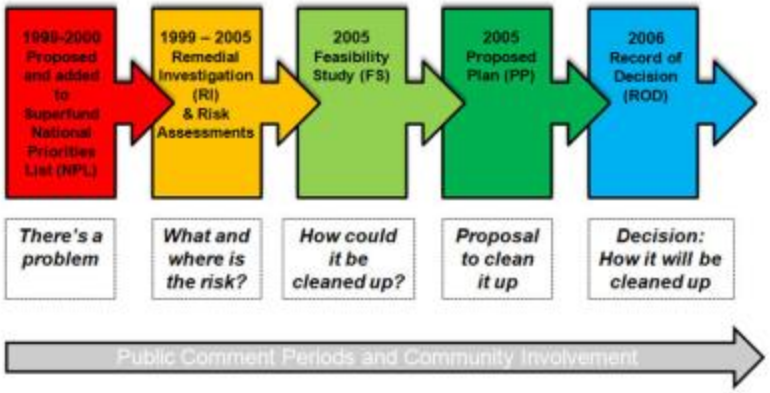
Technologies:

- Precipitation
  - Dissolved metals are made insoluble by the addition of an alkali such as hydrated lime, $Ca(OH)_2$
- Ion Exchange
  - Dissolved metals (ions) exchanged for other non-toxic ions on the surface of a resin

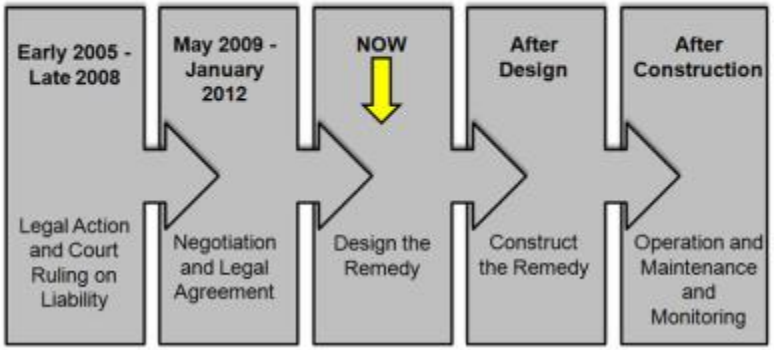


Midnite Mine
Current and Future

Key Milestones Already Met



Next Steps



Site Conditions

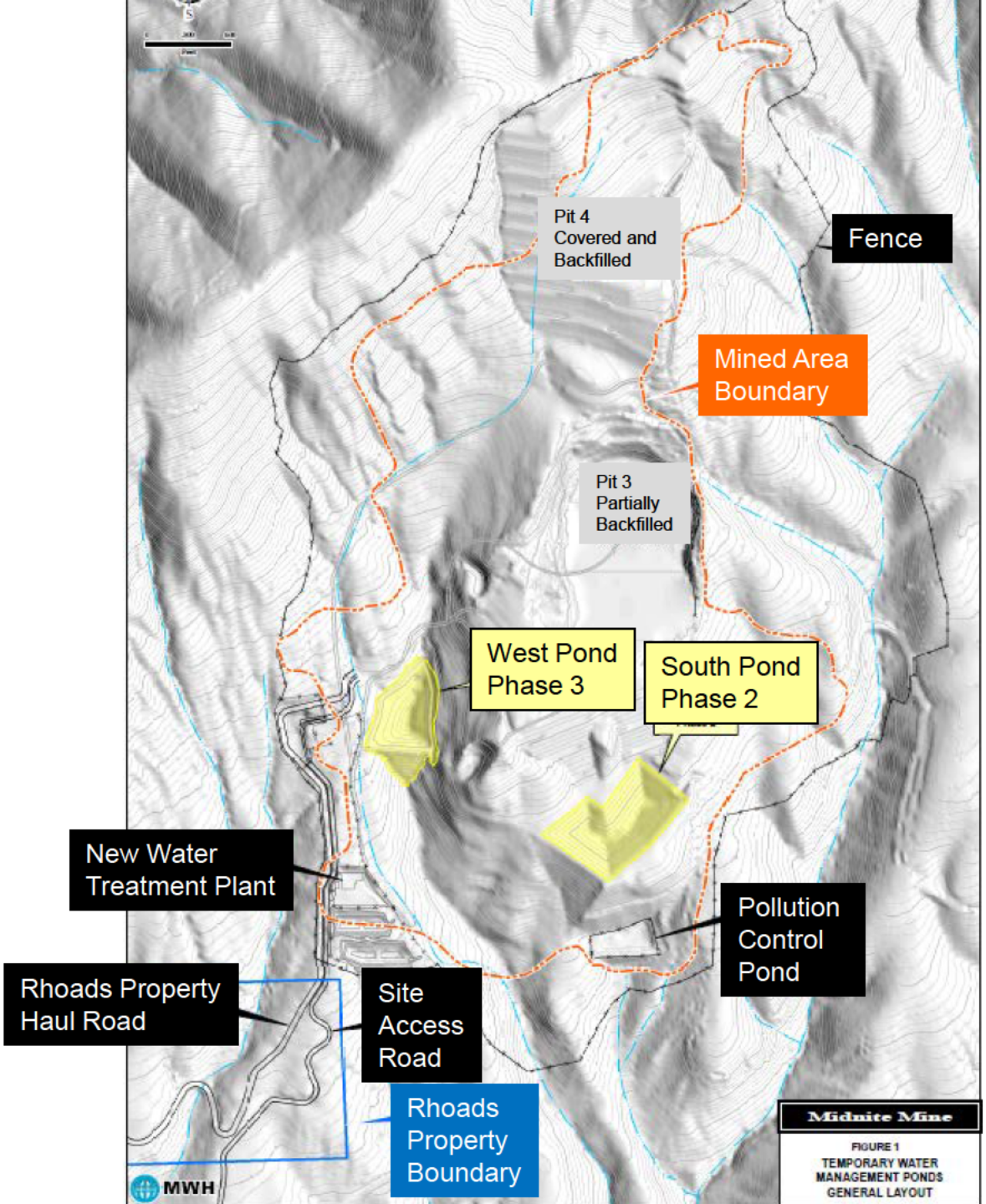
- Mining at the site caused:
  - Acid rock drainage
    - Contaminants carried into surface water and ground water
  - Radon gas
  - Radiation from exposed uranium-bearing rock
- Areas have been fenced off since 2009 to keep out large animals
- Surface water is being treated to remove uranium, radium and heavy metals

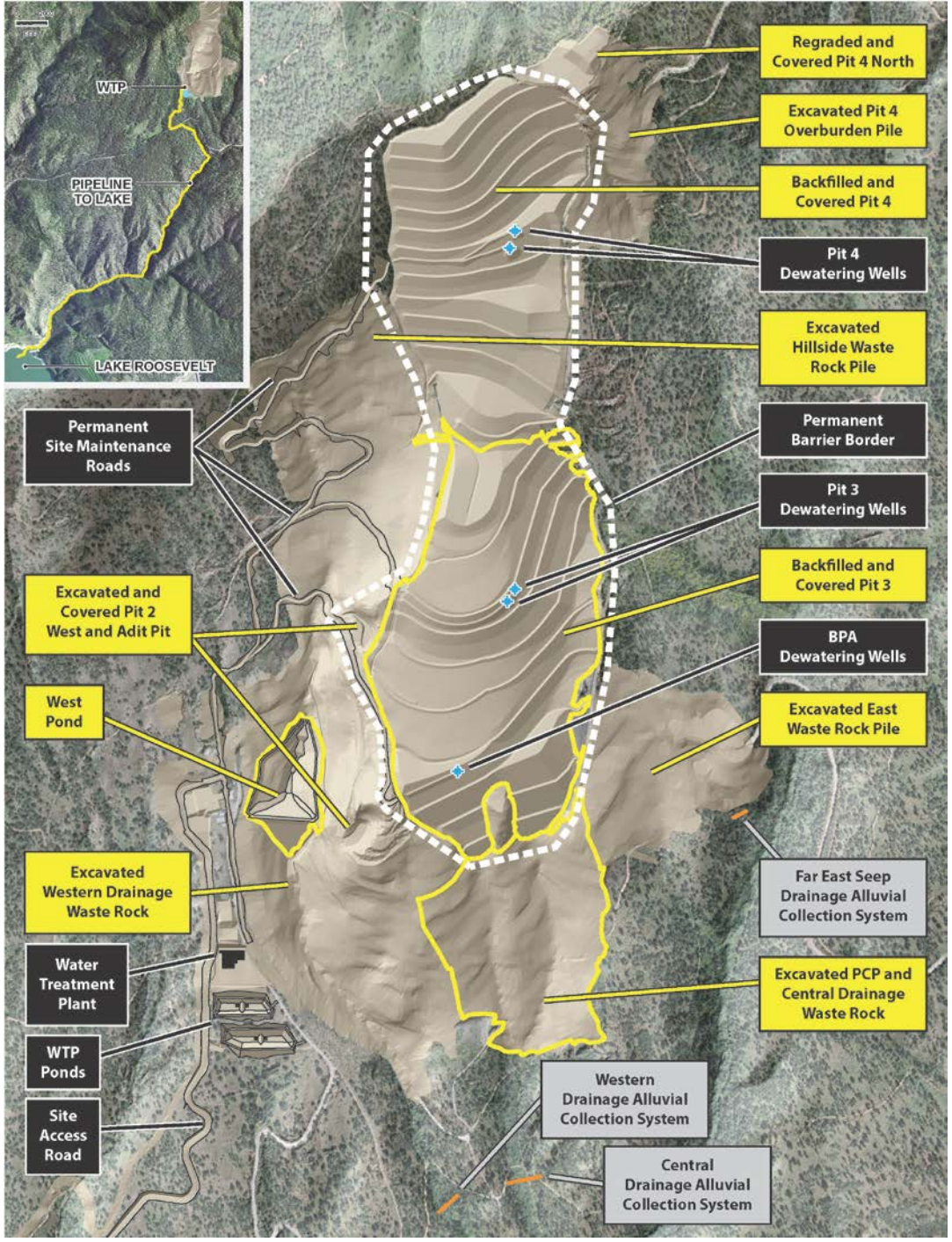
EXISTING MIDNITE MINE - MINE WASTES AND FACILITIES


PIT 3
PIT 2B
(backfilled)
PIT 2
(backfilled)
PROTORE STOCKPILE #1
WATER TREATMENT PLANT
PROTORE STOCKPILE #2
BOYD PIT
(backfilled)
EAST WASTE ROCK PILE
ORE STOCKPILE #3
PIT 1
(backfilled)
PROTORE STOCKPILE #4
LIME PROTORE STOCKPILE #5
ORE AND PROTORE
STOCKPILE #6
SOUTH WASTE ROCK PILE
POLLUTION
CONTROL
POND

Record of Decision

- Contain mine waste in the mine pits with sumps, wells, drainage layers, liners, soil cover and vegetation
- Collect and treat mine-affected water at a new water treatment plant
  - Treated water piped to the Spokane River Arm of Lake Roosevelt
- Natural recovery of Blue Creek unless later sampling shows active cleanup is needed
- Natural recovery of ground water
- Prohibit use of ground water until it is clean enough
- A boulder barrier to keep vehicles away from waste containment areas


Pit 4
Covered and
Backfilled
Fence
Mined Area
Boundary
Pit 3
Partially
Backfilled
West Pond
Phase 3
South Pond
Phase 2
New Water
Treatment Plant
Pollution
Control
Pond
Rhoads Property
Haul Road
Site
Access
Road
Rhoads
Property
Boundary
MWH
Midnite Mine
FIGURE 1
TEMPORARY WATER
MANAGEMENT PONDS
GENERAL LAYOUT


WTP
PIPELINE TO LAKE
LAKE ROOSEVELT
Regraded and Covered Pit 4 North
Excavated Pit 4 Overburden Pile
Backfilled and Covered Pit 4
Pit 4 Dewatering Wells
Excavated Hillside Waste Rock Pile
Permanent Site Maintenance Roads
Permanent Barrier Border
Pit 3 Dewatering Wells
Backfilled and Covered Pit 3
Excavated and Covered Pit 2 West and Adit Pit
BPA Dewatering Wells
West Pond
Excavated East Waste Rock Pile
Excavated Western Drainage Waste Rock
Far East Seep Drainage Alluvial Collection System
Water Treatment Plant
Excavated PCP and Central Drainage Waste Rock
WTP Ponds
Western Drainage Alluvial Collection System
Site Access Road
Central Drainage Alluvial Collection System

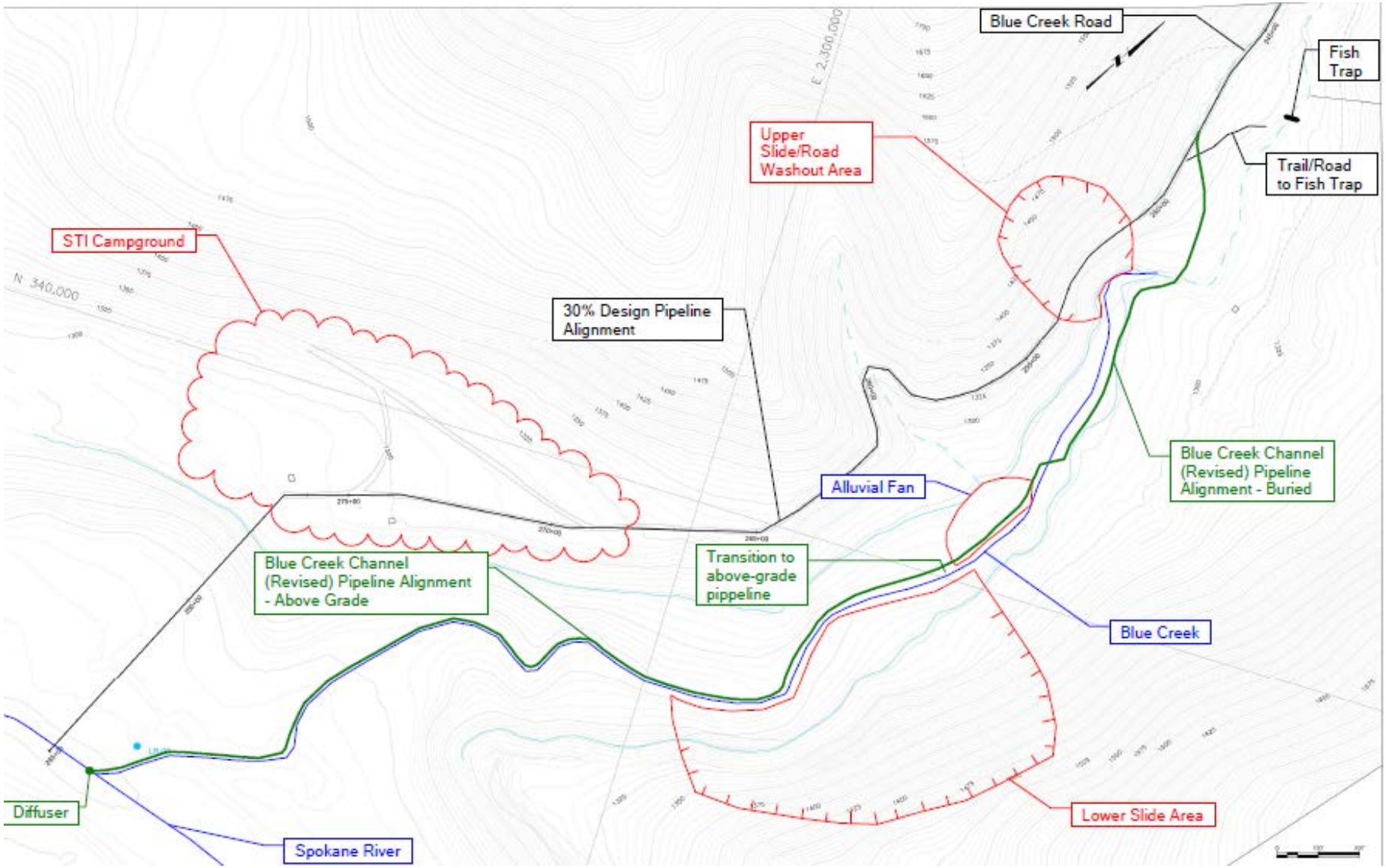

Blue Creek Road
Fish Trap
Upper Slide/Road Washout Area
Trail/Road to Fish Trap
STI Campground
30% Design Pipeline Alignment
Alluvial Fan
Blue Creek Channel (Revised) Pipeline Alignment - Buried
Blue Creek Channel (Revised) Pipeline Alignment - Above Grade
Transition to above-grade pippeline
Blue Creek
Diffuser
Spokane River
Lower Slide Area

FIGURE 2

(b) (6) BORROW AREA DETAILED MAP

90 Percent Design Discussion

Midnite Mine Superfund Site
90 Percent Design

Basis of Design Report

July 31, 2014

Prepared for:

Dawn Mining Company
PO Box 250
Ford, Washington 990413

and

Newmont USA Limited
6363 South Fiddler's Green Circle
Greenwood Village, Colorado 80111

Prepared By:

MWH Americas, Inc.
2890 E. Cottonwood Parkway, Suite 300
Salt Lake City, UT 84121

90 Percent Design

- Overall cleanup plan was determined by the Record of Decision and Consent Decree
- After 30 Percent Design approval - “concept design freeze”
  - Fundamentals of the cleanup design are fixed and not changeable
- Community comments for 90 Percent Design
  - Any specific concerns about the design or implementation of the design that are technically supportable
    - Example: It appears clarification of the rockfall safety plan is needed

Potential for Rock Slides

- Additional rockfall evaluation recommends:
  - Removal of rocks larger than 3 feet in diameter and monitoring of pit walls
  - A rockfall catch berm/ditch design (10-feet deep and 15-feet wide horizontally)
  - A portable rockfall barrier to be used in some areas

Source: http://www.miningmayhem.com/2014/01/rockslide-into-shovel.html

Potential for Rock Slides

- The 90 Percent Design still does not specifically address medium-size rockslides
  - Community members may want to ask that the design specifically discuss the safety plan for medium-size rockslides.
  - Will the planned berm/ditch design protect workers in the event of a medium-size rockslide?

Earthquake Potential

- DMC/Newmont's analysis of the site's earthquake potential found that the site exceeds EPA's level for triggering a seismic deformation analysis of cover soils.
  - Two combinations of a geomembrane/geocomposite drainage layer system that met EPA seismic stability requirements
    - Both include linear low density polyethylene (LLDPE) geomembrane, not polyvinyl chloride (PVC)

Water Treatment Plant

- Tests on the ion exchange system indicate that:
  - some waste products can be sent to a non-hazardous waste landfill
  - some waste products will be sent to a hazardous and radioactive waste facility
- The water treatment plant design is being held at the 60 percent level until the NPDES permit is reissued

Wastewater Discharge

- DMC/Newmont will need a revised National Pollutant Discharge Elimination System (NPDES) permit to allow it to discharge wastewater from the water treatment plant.
- DMC/Newmont submitted the permit application on March 20, 2013.
  - The permit will be available for public comment

Pipeline Route from WTP to Spokane River Arm of Lake Roosevelt

- Pipeline alignment changed between the 30 Percent and 60 Percent Design
  - Result of an April 25, 2013 technical meeting/site visit
  - Pipeline to be routed through the Blue Creek thalweg (line of lowest elevation) just before the pipeline enters Lake Roosevelt instead of through the campground
    - To avoid potential cultural artifacts in the area
- The effluent pipeline design is on hold at the 60 Percent level pending reissue of the NPDES permit

Pipelines

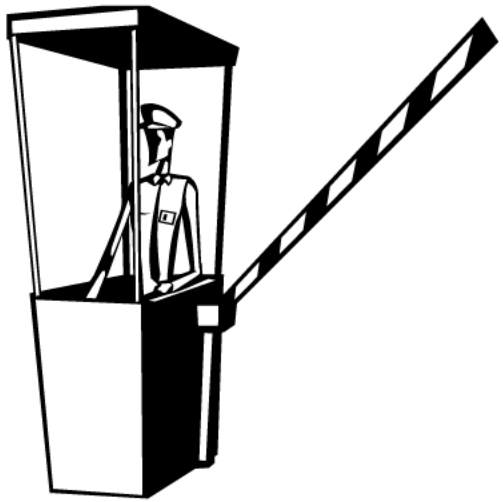
- Pipelines will carry water from the backfilled pits to the water treatment plant, and from the and from the plant to the Spokane River Arm of Lake Roosevelt
  - DMC/Newmont needs an access agreement from the tribe to allow pipeline construction
    - DMC/Newmont is in negotiations with the tribe

Increased Truck Traffic

- The 90 Percent Design does not address increased truck traffic on public roads and possible transport of hazardous wastes on public roads.
  - TASC encourages community members to discuss any concerns or questions with EPA.

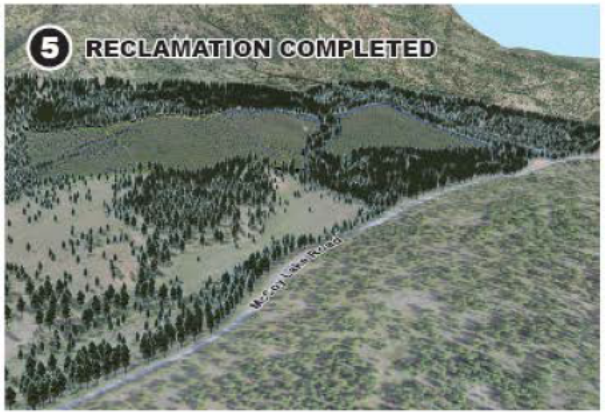
Site Access

- Access to the work areas will be restricted to one or two access points
- The access restrictions is described in the Remedial Action Work Plan (RAWP)



Selection of (b) (6) Property Borrow

- DMC/Newmont's use of the (b) (6) borrow area was approved by the Tribal Council
  - Plans include hiring a tribal timber contractor to clear and harvest commercial-value timber
    - DMC/Newmont will coordinate distribution of timber proceeds with the Tribal Council
  - DMC/Newmont plans to reseed with a native, tribal-approved seed mix and plant native trees and shrubs



1. Undisturbed Rhoads Area
2. Borrow material removed and topsoil replaced on western portion of site
3. Vegetation beginning to re-establish in western portion of site; borrow material removed and topsoil replaced on middle portion of site; 30-foot buffer on either side of creek left undisturbed
4. Vegetation re-establishing in western and middle portions of site; borrow material removed and topsoil replaced on eastern portion of site
5. Vegetation re-establishing in all areas of site

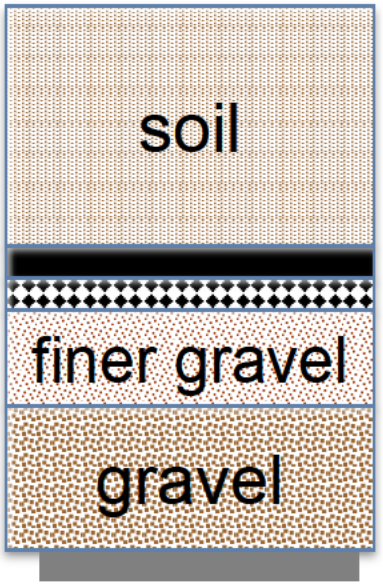
Midnite Mine

FIGURE 4-1

EXCAVATION AND RECLAMATION OF (b) (6) BORROW AREA

Pit Liners

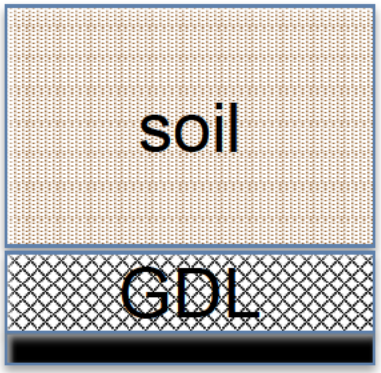
- Appendix D includes information about the liner that will be installed under the waste in the pits
  - From the bottom up, the pits will have:
    1. a layer of drain gravel at the bottom
    2. a liner-bedding layer of finer-grained gravel
    3. a geofabric liner cushion to provide puncture protection
    4. a geomembrane liner of 80-mil HDPE (high-density polyethylene)
    5. a 3-foot layer of fine-grained material to protect the geomembrane



Pit Covers

- Appendix D includes information about the covers that will be installed over the waste in the pits
  - From the top down, the covers will have:
    1. Three-foot continuous soil cover layer
    2. Geocomposite drainage layer (GDL) on areas of mine waste that are sloped at steeper than a 15 percent grade
    3. Geomembrane

       40 mil linear low density polyethylene (LLDPE) with a textured top surface



Worker Safety

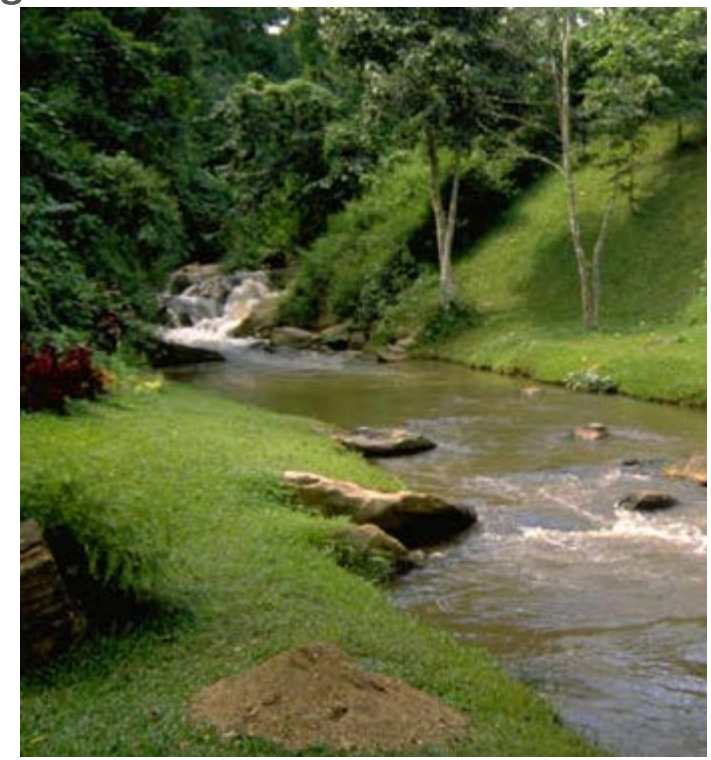
- Appendix L covers worker health and safety requirements
  - Radiation monitoring requirements in Radiation Safety Manual
  - Operations that generate excessive dust will be monitored
    - Dust suppression as needed
  - Workers will attend a site orientation meeting prior to conducting any field work and attend regular site safety meetings as needed

Stormwater Management

- Appendix O describes stormwater management plans
  - Construction Stormwater Pollution Prevention Plan
    - Temporary Sediment- and Erosion-Control Plan during construction
      - Best management practices
      - Will comply with the NPDES permit
    - Permanent Stormwater Control Plan
      - Permanent site features to control stormwater in the remediated areas

Water Use

- DMC/Newmont needs to obtain legal access for the consumptive use of water
- Negotiations of water use lease, access to the site and institutional controls are ongoing



Contractors

- Appendix V presents the plans for obtaining the goods and services needed to conduct the cleanup
  - The companies doing the cleanup will comply with the tribe's Tribal Employment Rights Ordinance (TERO)
  - Preference will be granted to qualified tribal contractors.

Assurance

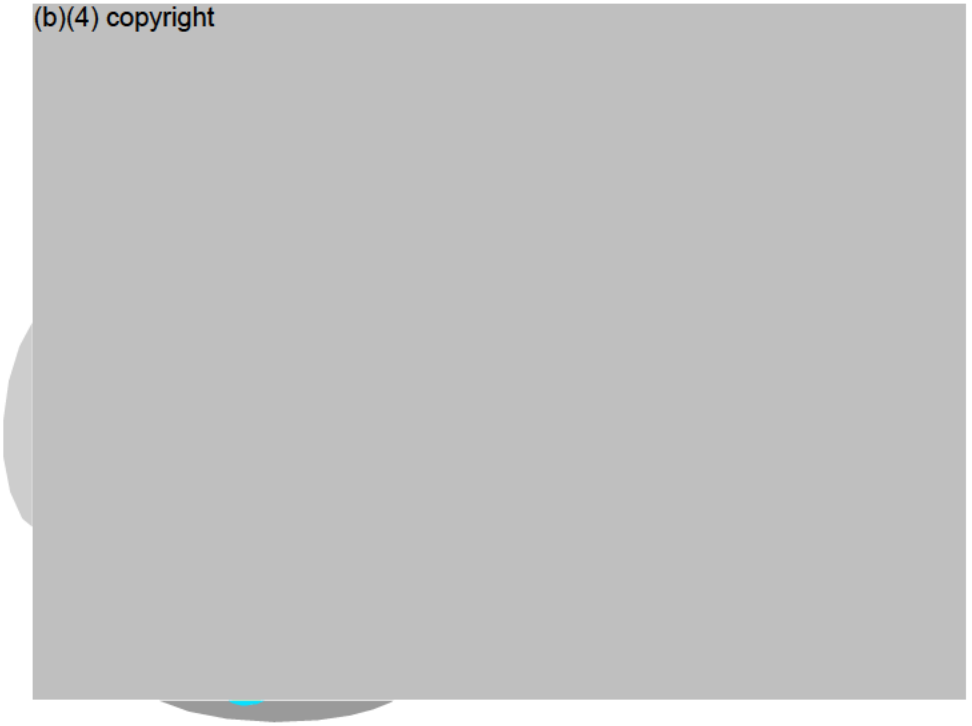
Financial Assurance:

- Consent Decree
  - Enforceable legal agreement
  - Identifies work to be done (cleanup and O&M)
  - Identifies financial contributions agreed to:
    - by the federal government
    - by the mining companies
  - In exchange for the commitments:
    - CERCLA liability is settled
    - a clear process is outlined
    - parties are protected from lawsuits for CERCLA work

Work Completion Assurance:

- EPA can apply penalties for nonperformance
- Performance guarantees for $193M cost of cleanup
  - $42M is held in a trust fund
  - $151M is letter of credit
  - EPA has access to the trust fund and the funds in the letter of credit if EPA has to take over the work

Discussion



Contact Information

TASC Midnite Mine website:

www.community-plan.net/tasc_midnitemine

TASC Program website:

www.epa.gov/superfund/community/tasc

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